U of Chicago, Master of Computer Sciense
Please limit your responses to the following essay questions to 300 or fewer words.

- 1. Please describe your career goals, both short and long term.

  My short term career goal is to become a data analyst in a company, but I plan to work my way up to a big global company, such as Facebook, Apple or Google. I enjoy making intelligent decisions after analyzing huge sets of data. After I gain experience for a couple of years, my next step is to become a technology consultant in consulting firms, such as Accenture and McKinsey. After collecting experience and building connections, my final goal is to run my own business by starting a technology company and to help my parents develop their modeling business in a more technologically advanced way.

- 2. How will earning a MS in CS from the University of Chicago help you to achieve the career goals stated above?

  During college, I picked computer engineering over software engineering because I thought that it would be great to diversify myself, besides programming software, by getting more hands on experience with hardware and circuit boards. In addition, this major provided me an opportunity to learn more of the fundamentals of the computer architecture, hence built a solid foundation in computer engineering. However, since this curriculum covers a wide range of fields in both computer science and electrical engineering, I felt that four years of college was not enough time for me to dig into one area and become an expert.

  Earning a master degree in CS will fill the gaps in my knowledge of computer science. As I was interviewed by twitter and other companies, they noticed that I could efficiently write optimized codes for the areas that I am proficient, such as C/C++, but I could not give flawless answers for some of the questions, such as query language. As technology advanced, machine learning, which I am highly interested in but do not have time to delve into, becomes indispensable for many applications. It is also a required skill for a data analyst.

  In order to become a qualified data analyst, and satisfy my inquisitive heart, I decided to further my education by pursing a MS in CS at University of Chicago. I love the 12-course program, where the data analytics concentration provides the courses I want to devote myself to, such as machine learning and database system. I believe taking classes and participating in the internship will fully prepare me to achieve my short term goal. The skills I am going to learn along the program will impact my life and help me reach my dream career as well.

- 3. Describe a project, either academic or professional, that you are most proud of.

  I am currently on a project called Nat Car, where I am designing an autonomous car from scratch. We started the project by programming a microcontroller. We have a line scan camera connected to the microcontroller that detects a white track on a black background. I developed two algorithms to detect turns: one is called voltage threshold method and the other is called slope threshold method. These two methods analyze the data taken from the camera and generates outputs to control a servo motor that controls the steering wheel of the car. In order to speed up the data processing, instead of looping over the entire pixel array, I used binary search to optimized the code. This gives my car a quick reaction time.

  Since the track could be complicated, my car needs to see more of the track and preprocess data in order to keep the speed up when in a straight line and slow down in time to turn. I came up with the idea of adding one more camera in a higher position to preview the track. I utilized the Ping-Pong buffer method, which I learned from parallel programming, to store the preprocessing data and to alternate them with a current set of data.

  After I assembled the car with a printed-circuit-board that I designed with my partner, we needed to change parameters when testing. Connecting to the lap-top was time consuming and was not an ideal way to operate. To tackle with this problem, I programmed a blue tooth chip and soldered it to the board so that I could changed parameters wirelessly. We are still testing the car now. Although my team has the fastest record to run on a track, more optimizations could be done regarding the lighting condition and DC Motor control.